

567—69.7(455B) Mound system.**69.7(1) General requirements.**

a. Mound systems shall be permitted only after a thorough site evaluation has been made and landscaping, dwelling placement, effect on surface drainage and general topography have been considered.

b. Mound systems shall not be utilized on sites which are subject to flooding with a ten-year or greater frequency.

c. Mound systems shall not be utilized on soils where the high groundwater level, impermeable bedrock or soil strata having a percolation rate exceeding 120 minutes per inch occur within 12 inches of natural grade, or where creviced bedrock occurs within 20 inches of natural grade.

d. Mound systems shall be constructed only upon undisturbed naturally occurring soils.

e. Mound systems shall be located in accordance with the distances specified in Table I as measured from the outer edge of the mound.

f. No buildings, driveways or other surface or subsurface obstructions shall be permitted within 50 feet on the down gradient side of the mound when the mound is constructed on a slope greater than 5 percent. No future construction shall be permitted in this effluent disposal area as long as the mound is in use.

g. Specifications given in these rules for mounds are minimal and may not be sufficient for all applications. Technical specifications are changing with experience and research. Other design information beyond the scope of these rules may be necessary to properly design a mound system.

69.7(2) Material for mound fill.

a. The mound shall be constructed using clean, medium-textured sand, sometimes referred to as concrete sand. The sand size shall be such that at least 25 percent by weight shall have a diameter between 2.0 and 0.25 mm, less than 35 percent with a diameter between 0.25 and 0.05 mm and less than 5 percent with a diameter between 0.002 and 0.05 mm.

b. Rock fragments larger than 1/16 inch (2.0 mm) shall not exceed 15 percent by weight of the material used for sandy fill.

69.7(3) Construction details.

a. There shall be a minimum of 3 feet of fill material and undisturbed naturally occurring soils between the bottom of the washed gravel and the highest elevation of the limiting conditions defined in 69.7(1) "c."

b. Gravel shall be washed and shall range in size from ¾ inch to 2½ inches.

c. From 1 to 2 feet of medium-textured sand (depending upon the underlying soil depth, see 69.7(3) "a") must be placed between the bottom of the gravel and the top of the plowed surface of the naturally occurring soil.

d. Mound systems shall utilize absorption bed distribution piping design. The bed shall be installed with the long dimension parallel to the land contour. Systems on steep slopes with slowly permeable soils should be narrow to reduce the possibility of toe seepage.

e. Minimum spacing between distribution pipes shall be 4 feet, and a minimum of 3 feet shall be maintained between any trench and the sidewall of the mound.

f. No soil under or up to 50 feet down gradient of the mound may be removed or disturbed except as specified herein.

g. Construction equipment which would cause undesirable compaction of the soil shall be kept off the base area. Construction or plowing shall not be initiated when the soil moisture content is high. If a sample of soil from approximately 9 inches below the surface can be easily rolled into a 1/8- to 1/4-inch diameter wire, the soil moisture content is too high for construction purposes.

h. Aboveground vegetation shall be closely cut and removed from the ground surface throughout the area to be utilized for the placement of the fill material.

i. The area shall be plowed to a depth of 7 to 8 inches, parallel to the land contour with the plow throwing the soil up slope to provide a proper interface between the fill and the natural soil. Tree stumps should be cut flush with the surface of the ground, and roots should not be pulled.

- j.* The base area of the mound is to be calculated on the results of percolation rate as indicated in Table IV. The base area of the mound below and down slope from the trenches, excluding the area under the end slopes, must be large enough for the natural soil to absorb the estimated daily wastewater flow.
- k.*

Table IV

Percolation Rate Min/Inch	Application Rate Gal/Square Foot/Day
Less than 1	Not Suitable
1 - 5	1.25
6 - 15	1.00
16 - 30	.75
31 - 45	.50
46 - 60	.40
61 - 90	.20
91 - 120	.10
Over 120	Not Suitable

l. The area of the fill material shall be sufficient to extend 3 feet beyond the edge of the gravel area before the sides are shaped to at least a 4:1 slope (preferably 5:1).

m. Distribution system.

- (1) The distribution pipe shall be rigid plastic pipe, schedule 40 or 80 with 1-inch nominal diameter.
- (2) The distribution pipe shall be provided with a single row of ¼-inch perforations in a straight line 30 inches on center along the length of the pipe or an equivalent design that ensures uniform distribution. All joints and connections shall be solvent-cemented.
- (3) The distribution pipe shall be placed in the clean, washed gravel (or crushed limestone as described in 69.6(4) "a") with holes downward. The gravel shall be a minimum of 9 inches in depth below and 3 inches in depth above the pipe.
- (4) No perforations shall be permitted within 3 inches of the outer ends of any distribution pipes.
- (5) The outer ends of all pressure distribution lines shall be securely capped.
- (6) The central pressure manifold should consist of 1½-inch or 2-inch solid plastic pipe using a tee or cross for connecting the distribution lines.

n. Construction should be initiated immediately after preparation of the soil interface by placing all of the sandy fill material needed for the mound (to the top of the trench) to a minimum depth of 21 inches above the plowed surface. This depth will permit excavation of the trenches to accommodate the 9 inches of washed gravel or crushed stone necessary for the distribution piping.

o. The absorption trench or trenches shall be hand excavated to a depth of 9 inches, the bottoms of the trenches made certain to be level.

p. Twelve inches of gravel shall be placed in the trench and hand leveled, and then 3 inches of the gravel removed with a shovel in the location where the distribution pipe will be placed. After the distribution pipe is placed the pipe shall be covered with 2 inches of gravel.

q. The top of the gravel shall be covered with synthetic drainage fabric. Unbacked, rolled 3½-inch-thick fiberglass insulation, untreated building paper, or other suitable material may be used with approval of the administrative authority. Plastic or treated building paper shall not be used.

r. After installation of the distribution system, gravel and material over the gravel, the entire mound is to be covered with topsoil native to the site or of similar characteristics to support vegetation found in the area. The entire mound shall be crowned by providing 12 inches of topsoil on the side slopes with a minimum of 18 inches over the center of the mound. The entire mound shall be seeded, sodded or otherwise provided with a grass cover to ensure stability of the installation.

s. The area surrounding the mound shall be graded to provide for diversion of surface runoff water.

69.7(4) Dosing.

- a.* Dosing shall be required for mound systems.
- b.* The dosing volume shall be five to ten times the distribution piping network volume.
- c.* The size of the dosing pump or siphon shall be capable of maintaining an approximate pressure of one psi at the outer ends of the distribution lines.